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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/513,090	02/25/2000	Pulin R Patel	067191.0113	7780

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02/03/2004

Baker Botts LLP
2001 Ross Avenue
Dallas, TX 75201-2980

EXAMINER

FERRIS, DERRICK W

ART UNIT	PAPER NUMBER
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2663

DATE MAILED: 02/03/2004

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/513,090

Applicant(s)

PATEL ET AL.

Examiner

Derrick W. Ferris

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 37-46 and 85-102 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 37-46 and 85-102 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. **Claims 37-46 and 85-102** are pending.
2. With respect to the restriction, applicant is correct in noting that claims 1-36 (and not 26), 47-84, and 103-107 were withdrawn from consideration.
3. Examiner **withdraws** the objection to the specification for Office action filed 10/07/03 and thanks applicant for amending the specification.
4. Examiner **withdraws** the 112-first paragraph rejection for Office action filed 10/07/03. Examiner thanks applicant for pointing out that the rejection should have been an enablement rejection instead of a written description rejection. In particular, claims 37 and 85 recite the limitation

*“transitioning the wireless node to a normal operating state in response to
determining the operational data is within predefined parameters”.*

Specifically, at issue is the term “predetermined” in reference to parameters. Support for enablement is found in the context of applicant’s invention with respect to at least step 224 in figure 7 and page 22, middle paragraph (applicant also pointed out page 36, lines 6-23 in reference to figure 21). Specifically, applicant teaches: *“After operational thresholds have been met for a specified period of time, the wireless router 30 transitions to the operational state 224”*. Operational thresholds 80 are shown e.g., in figure 3 and described, inter alia, on pages 15-16. Examiner also notes a similar context as disclosed at page 36, lines 19-23. Thus the rejection is withdrawn.

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5. Examiner **withdraws** the 112-2nd paragraph rejection for Office action filed 10/07/03 given similar reasons stated above for 112-first paragraph rejection.

6. Examiner does **not withdraw** the obviousness rejection to *Sevens* in view of *Haas* for Office action filed 10/07/03. In particular, in response to applicant's arguments applicant argues that *Sevens* does not teach the above-cited step at column 3, lines 5-11 of *Sevens*.

As to claims 37 and 85, relevant to the argument is the relationship among the steps as recited in the claims. In particular, that a step of transitioning the wireless node may not necessarily follow a step of reconfiguring the wireless nodes (i.e., a step of transitioning a wireless node may come some point in time before or after a step of reconfiguring the wireless nodes since there is no recited relationship between these two limitations).

Sevens discloses in figure 2 transitioning the wireless node to a normal operation state. At issue between the examiner and applicant is whether the transition is based on or in response to "determining the operational data is within predefined parameters". Since applicant recites no specific parameters, the examiner assumes a reasonable but broad interpretation of parameters. As such, *Sevens* discloses performing an optimizing step 34 which operates on the data collected at step 32 (see column 3, lines 5-24). Examiner notes that the data collected is similar to the operational data presented in applicant's figure 3. "Determining the operational data is within predefined parameters" is taught since the data is compared (e.g., using operational thresholds as supported by applicant page 22, middle paragraph and page 36, lines 19-23). Specifically, "the cost functions operate to compare the information within the database of step 32 to variables in the cost function to obtain an optimum link assignment" [column 3, lines 5-25]. Furthermore, examiner agrees that how such comparisons are made are well known in the art and require no

undue experimentation. As such, the rejection has been modified to include that instead of being obvious, the above-limitation is taught either directly or inherently.

As to claims 39 and 87, the examiner's reasoning is taught using the references in combination and using a reasonable but broad interpretation of operational data, list of neighbor nodes, and operational parameters. In particular, the reference in combination teaches that nodes enter and leave a zone in a multi-hop system such that a node maintains or tracks nodes that are in the zone, e.g., see right-hand column at page 102 of *Haas*. Thus when a change occurs and a node leaves the system then operational data modifies the list based on tracking, e.g., see column 3, lines 5-25 of *Stevens*. In modifying the list, the operational parameters are also modified. For example, the routing/forwarding tables (e.g., lists) are updated and these updates propagate changes through the zone which modifies operational parameters, e.g., see page 104, right-hand column of *Haas*.

7. Examiner does **not withdraw** the obviousness rejection to *Sevens* in view of *Haas* in further view of *Corson* for Office action filed 10/07/03. In response to applicant's arguments, applicant fails to consider the rejection using the references in combination. In particular, *Corson* teaches mobile IP and dynamic (i.e., automatic) network topologies (e.g., see top-left column on page 65). As adjusting other parameters impacts the topology, examiner notes that the RF topology is also determined based on the IP topology. Since both references teach wireless communications in general, and more specifically, multi-hop or ad-hoc networking, examiner notes a reason to combine the subject matter of the references as a whole. Thus one skilled in the art would be motivated to overlay IP over the network as taught by *Sevens* for the motivation of using IP in communicating at the network layer. Further motivations for using IP

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in an ad-hoc network are taught by *Corson*. Finally also note column 3, line 65 – column 4, line 4 of *Sevens* with respect to IP.

8. Examiner does **not withdraw** the obviousness rejection to *Sevens* in view of *Haas* and *Ciotti* for Office action filed 10/07/03. In response to applicant's arguments, the rejection has been cleaned up. Examiner notes that similar reasoning applies the previous rejection for claims 37 and 85.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. **Claims 37-40, 44-46, 85-88, and 92-94** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,949,760 to *Stevens et al.* ("*Stevens*") in view of "On the Performance of a Routing Protocol for the Reconfigurable Wireless Network" to *Haas et al* ("*Haas*").

As to **claim 37**, *Stevens* teaches a start-up state (i.e., applicant's start-up state 220), a learning state (i.e., applicant's learning state 222), and a general operational state (i.e., applicant's partial operational state 224). In particular, shown in figure 2 of *Stevens*, step 30 describes a start-up state; steps 32, 34, 36, 38, 40, and 42 describe a learning state; and step 44 describes a general operational state (i.e., a start-up state 220 configures the RF/IP topology and a learning state 222 refines the topology [see applicant's specification on page 20, lines 15-22]). The limitations "activating the wireless node"

and “activating a radio frequency” are taught in addition to a step of “automatically determining” as part of step 30 using a reasonable but broad interpretation of “activating”. In particular, as the quality of a wireless node and a wireless node’s neighbors are determined [column 2, lines 63-64] examiner notes that both the node and the RF links that the node uses to communicate with it’s neighbors must be “activated”. Once the quality of the links are determined (step 30), a transition to a learning state takes place as shown for step 32. In particular, step 32 collects operational data and modifies the operating parameters based on the operating data [column 3, lines 8-9]. Once the parameters are modified, a set of potential links are assigned and then the links are actually assigned (i.e., reconfigured) were a transition to a general operational state takes place since routing and switching take place (i.e., the traffic load is handled). *Stevens* teaches transitioning the wireless node to a normal operating state in response to determining the operational data is within predefined parameters at e.g., *Stevens* column 3, lines 5-25.

Examiner notes that the reference is silent or deficient to a further step of “*configuring the wireless node based on the operational parameters*” for a start up state. Examiner notes that it would have been obvious to someone skilled in the art prior to applicant’s invention to configure the wireless node based on the operational parameters. Examiner notes that it would have been obvious since in order for a node to communicate with itself and its neighbors a node must first be configured. Thus *Stevens* provides support for configuring a plurality of parameters using a reasonable but broad interpretation of “parameters”. As the position changes, examiner notes a motivation to

go back to a step 32, which is the learning state. Specifically, that the database created also may include position information of a node in a neighborhood, or a nodes position with respect to the community of neighbors, or a previous position of a node [column 3, lines 1-4]. Thus *Stevens* discloses reverting back to a learning state when the network changes or maintaining the current state when the network is consistent. In other words the reference teaches: “in response to determining the operational data is within predefined parameters”. As additional support, *Haas* discloses that nodes in network can be highly mobile, thus rapidly changing the nodal constellation and the presence or absence of links [left hand column page 102]. Thus *Haas* provides a further motivation for a need for nodes to reconfigure themselves if predefined parameters are not within thresholds and a need to maintain normal operations if predefined parameters are within thresholds (i.e., once a node starts routing/switching there is a need to reconfigure the node if the node moves out of a zone causing parameters not to be within a “predetermined threshold”), e.g., see page 104, right-hand column of *Haas*.

As to **claims 38 and 86**, see *Stevens* column 2, lines 63-64.

As to **claims 39 and 87**, see *Stevens* column 3, lines 5-25 in combination with *Haas* at page 102, right-hand column and page 104, right-hand column.

As to **claims 40 and 88**, see similar reasoning behind the rejection for claim 38.

As to **claims 44, 45, 92, and 93**, as each node 20 can route or switch, examiner notes that node 20 comprises of functionality indicative of a wireless router.

As to **claims 46 and 94**, see step 34 of figure 2 for *Stevens*.

As to **claim 85**, see the rejection for claim 37 where examiner notes it would have been obvious to implement the states using computer instructions as part of a design choice as is well known in the art.

11. **Claims 95-102** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,949,760 to *Stevens et al.* ("*Stevens*") in view of "On the Performance of a Routing Protocol for the Reconfigurable Wireless Network" to *Haas et al.* ("*Haas*") and in further view of "Internet Based Mobile Ad Hoc Networking" to *Corson et al.* ("*Corson*").

As to **claim 95**, in addition to the reasoning behind the rejection for claim 37, both *Stevens* and *Hass* are silent or deficient to disclosing an IP topology. Examiner notes that it would have been obvious to someone skilled in the art prior to applicant's invention to disclose IP for an ad hoc network. *Corson* cures the deficiency by disclosing a motivation to use IP over and ad hoc wireless network as is known in the art. In particular, figure 2 shows mobile routers capable of running IP.

As to **claims 96-102**, examiner notes that each node exchanges "self-information" which includes identification information (i.e., access technology), traffic load, available power (RF coverage parameters), potential destination (network configuration information), traffic quantities (control parameters, traffic priorities, and link quality (interference parameters) using a reasonable but broad interpretation of the claimed subject matter [column 2, lines 45-59].

12. **Claims 41, 42, 43, 89, 90, 91 and 43** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,949,760 to *Stevens et al.* ("*Stevens*") in view of "On the

Performance of a Routing Protocol for the Reconfigurable Wireless Network” to *Haas et al* (“*Haas*”) and U.S. Patent No. 6,421,731 to *Ciotti, Jr. et al.* (“*Ciotti*”).

As to **claims 41, 42, 43, 89, 90, 91 and 43**, *Stevens* may be silent or deficient to “transitioning back” to a known state in response to some action such as “determining the operational data is outside the predefined parameters”, “a change in neighboring wireless topology” and “accepting a modification in operating parameters requested by a neighboring node” (i.e., *Stevens* discloses in figure 2 assigning the link but not transitioning back to a known state although the examiner notes this may be supported as mentioned in the rejection for claim 37). Examiner notes that it would have been obvious to a skilled artisan prior to applicant’s invention to also transition back to a known state in response to an action for a wireless network based on predefined parameters. Support e.g., is provided by *Ciotti* using update messages from the network such as router updates. These update messages signify that an operational data is outside the predefined parameter, that a change in wireless topology has occurred, and that a modification in operating parameters has been accepted. As support, *Ciotti* discloses in figure 11a updating a routing table (i.e., based on a routing update message the method is revisited as is known in the art). Thus *Ciotti* discloses motivation for transitioning back to a known state (e.g., in order to handle updating messages) such that a skilled artisan would be motivated to transition back to a known state if changes occur in the network. These changes including “determining the operational data is outside the predefined parameters”, “a change in neighboring wireless topology” and “accepting a modification in operating parameters requested by a neighboring node”.

As all three reference disclose wireless networks in general, and more specifically wireless routing, examiner notes a motivation to combine the subject matter as a whole for all the references.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- US006414955B1 further strengthens the position that operating parameters are determined and configured at a start-up state, e.g., see figures 12a-d (e.g., see column 16, line 54- column 17, line 8) and column 8, lines 7-47.
- US006421731B1 further strengthens the position of a list of neighbors which are modified based on operational data, e.g., see figures 6 and 11a.

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derrick W. Ferris whose telephone number is (703) 305-4225.


The examiner can normally be reached on M-F 9 A.M. - 4:30 P.M. E.S.T.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on (703) 308-5340. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 305-3900.


DWF

Derrick W. Ferris
Examiner
Art Unit 2663


CHI PHAM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600 1/24/08